INCH-POUND

MIL-DTL-12883/48D
18 February 2003
SUPERSEDING
MIL-PRF-12883/48C
16 December 1999

DETAIL SPECIFICATION SHEET

# SOCKET, PLUG-IN ELECTRONIC COMPONENTS, FOR RELAYS, 3-POLE, 25 AMPERES (MIL-PRF-83536/32 AND /33)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification and MIL-DTL-12883.

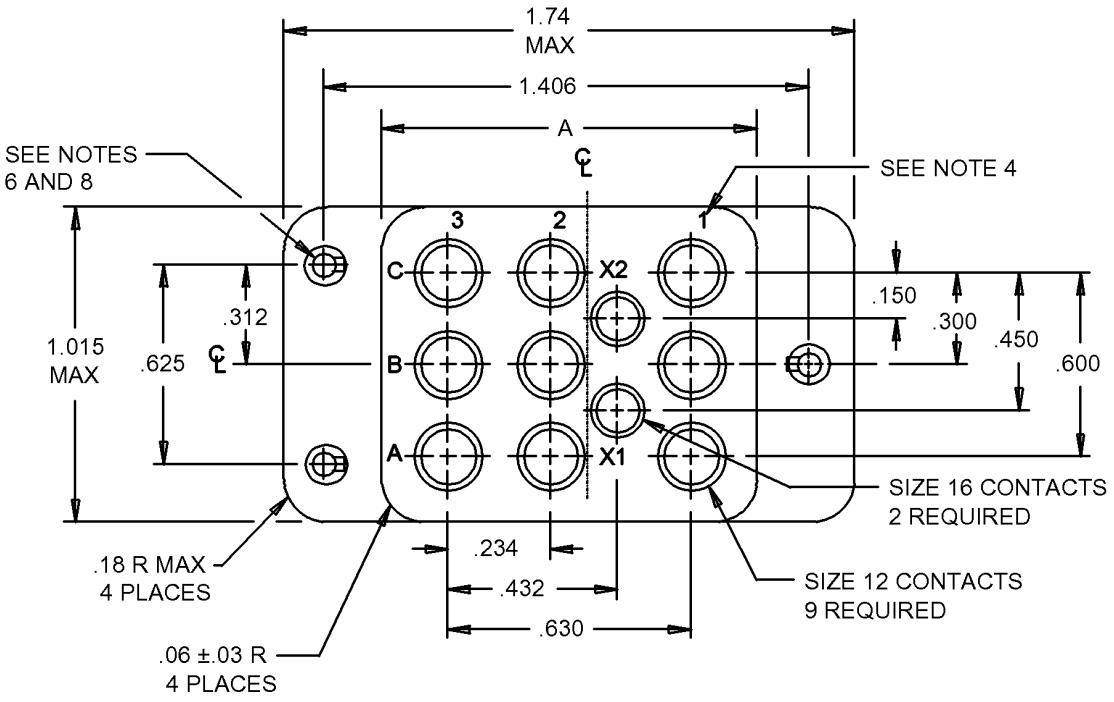
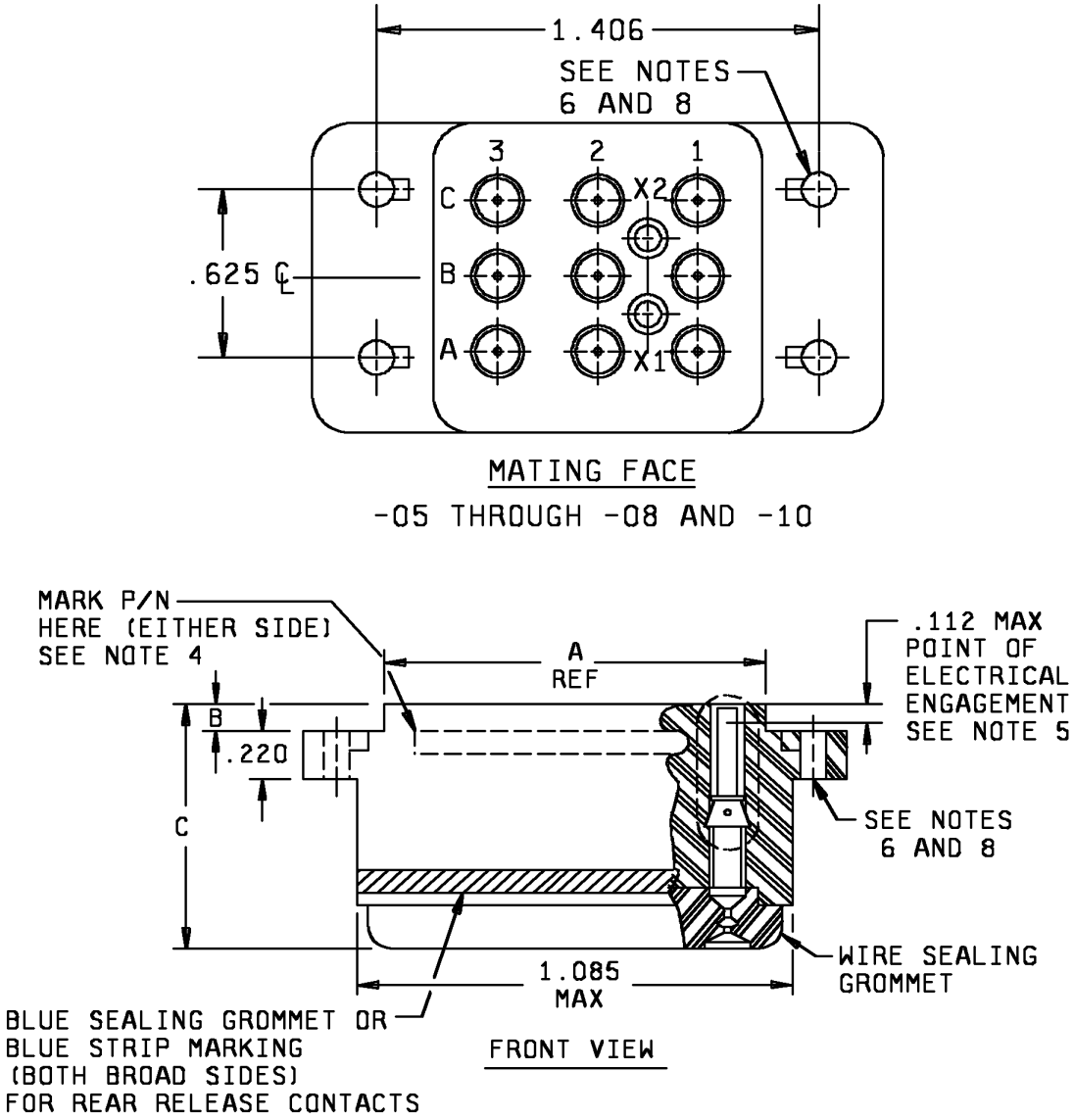



FIGURE 1. Socket configuration.


DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.




Dimensions

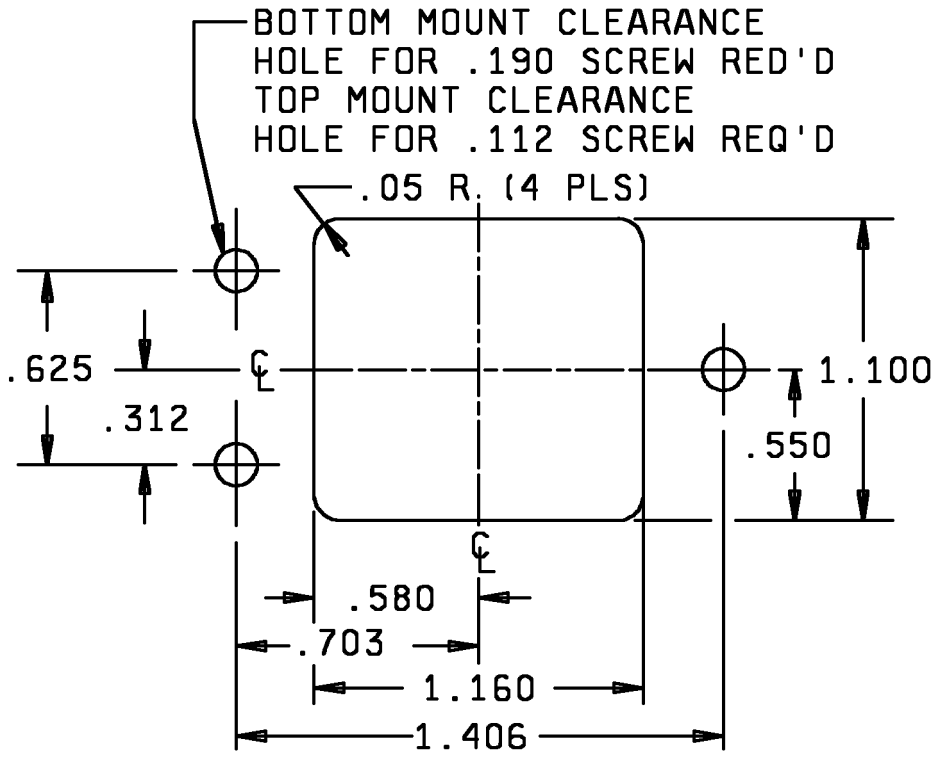
| Dash number | A (mm) | B (mm) | C max (mm) |
|---|---|---|---|
| -01, -02, -05, -06, 09 and -10 | 1.000 (25.40) | .093 (2.36) | .890 (22.61) |
| -03, -04, -07, and -08 | 1.025 (26.04) | .140 - .135 (3.56 - 3.43) | 1.250 (31.75) |

FIGURE 1. Socket configurations - Continued.

| Inches | mm | Inches | mm |
|---|---|---|---|
| .03 | 0.76 | .312 | 7.92 |
| .06 | 1.52 | .432 | 10.97 |
| .112 | 2.84 | .450 | 11.43 |
| .150 | 3.81 | .600 | 15.24 |
| .174 | 4.42 | .625 | 15.88 |
| .18 | 4.57 | .630 | 16.00 |
| .220 | 5.59 | 1.015 | 25.78 |
| .234 | 5.94 | 1.085 | 27.56 |
| .300 | 7.62 | 1.406 | 35.71 |

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are for general information only.
3. Unless otherwise specified tolerances are ± .01 inch (0.25 mm) for two place decimals and ± .005 inch (0.13 mm) for three place decimals.
4. Marking shall be characters, which are molded .035 inch (0.90 mm) minimum ink marking optional in accordance with MIL-STD-1285.
5. Point of electrical contact from mating face of socket insulator to the socket contact.
6. Keyway is shown for loose stud mounting configuration only (see figure 5, detail A).
7. For mating relay see table I.
8. Configuration for mounting see figures 4, 5 and table I.

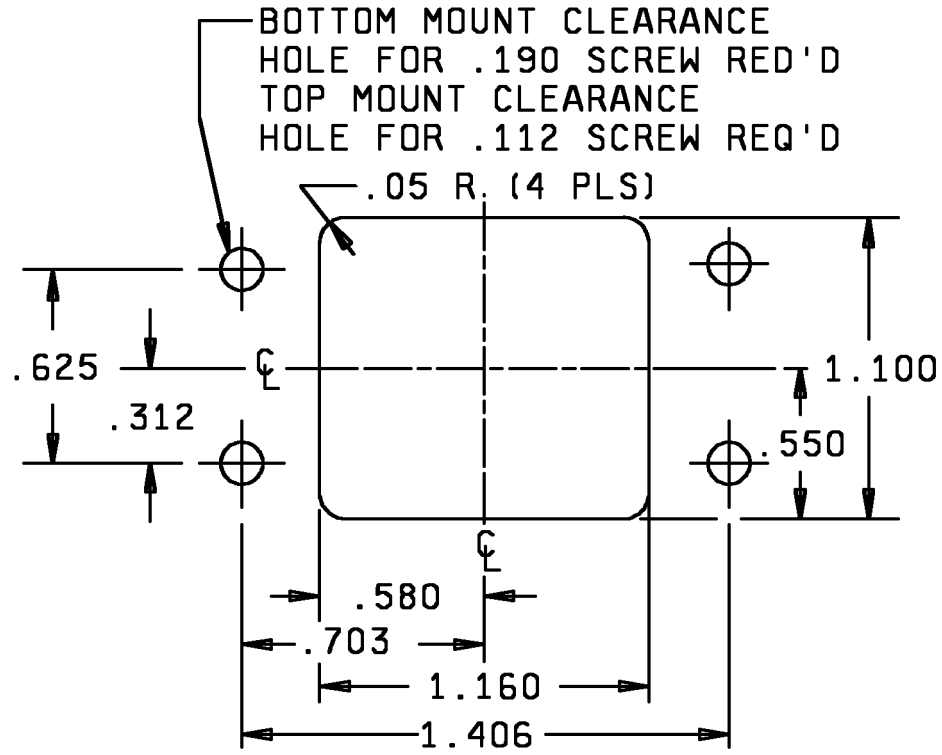
FIGURE 1. Socket configurations - Continued.




RECOMMENDED MOUNTING DIMENSIONS
-01 THROUGH -04 AND -09

| Inches | mm |
|---|---|
| .05 | 1.27 |
| .112 | 2.84 |
| .190 | 4.83 |
| .312 | 7.92 |
| .550 | 13.97 |
| .580 | 14.73 |
| .625 | 15.88 |
| .703 | 17.86 |
| 1.100 | 27.94 |
| 1.160 | 29.46 |
| 1.406 | 35.71 |

FIGURE 2. Recommended mounting dimensions.




RECOMMENDED MOUNTING DIMENSIONS

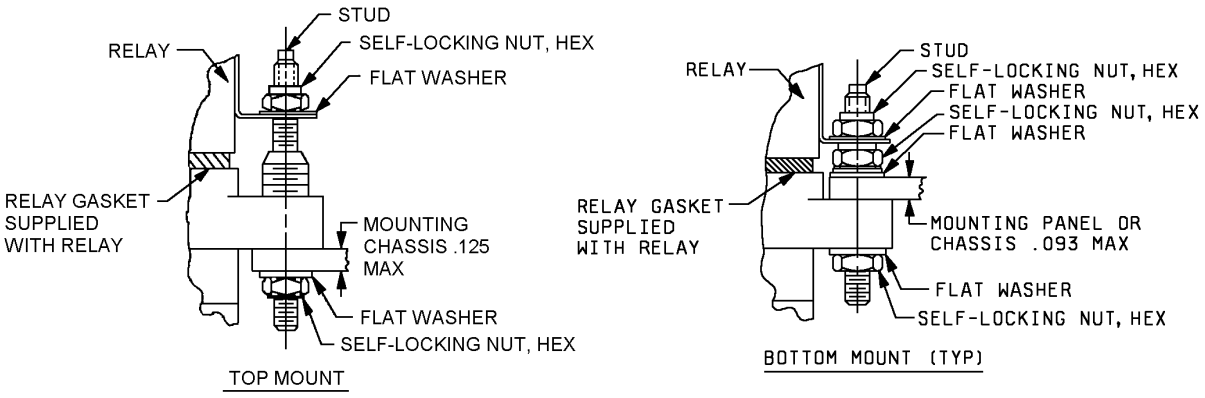
-05 THROUGH -08 AND -10

| Inches | mm |
|---|---|
| .05 | 1.3 |
| .112 | 2.84 |
| .190 | 4.83 |
| .312 | 7.92 |
| .550 | 13.97 |
| .580 | 14.73 |
| .625 | 15.88 |
| .703 | 17.86 |
| 1.100 | 25.40 |
| 1.160 | 29.46 |
| 1.406 | 35.71 |

NOTES:

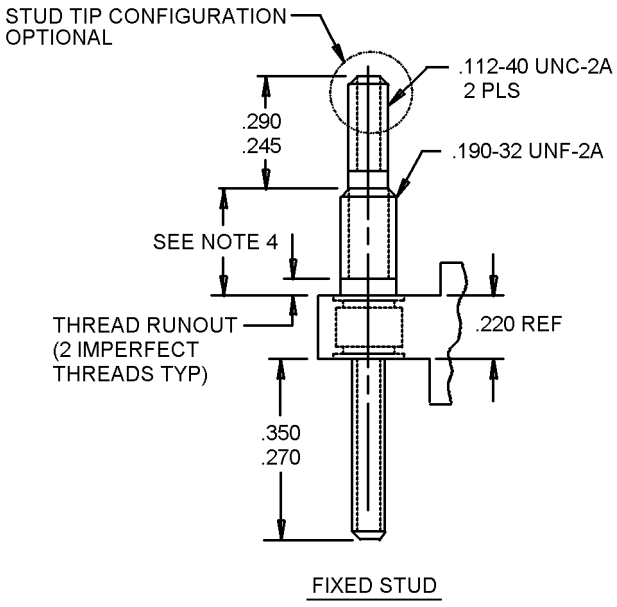
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified tolerances are ± .01 inch (0.25 mm) for two place decimals and ± .005 inch (0.13 mm) for three place decimals.

FIGURE 2. Recommended mounting dimensions.




| Inches | mm |
|---|---|
| .093 | 2.36 |
| .125 | 3.18 |

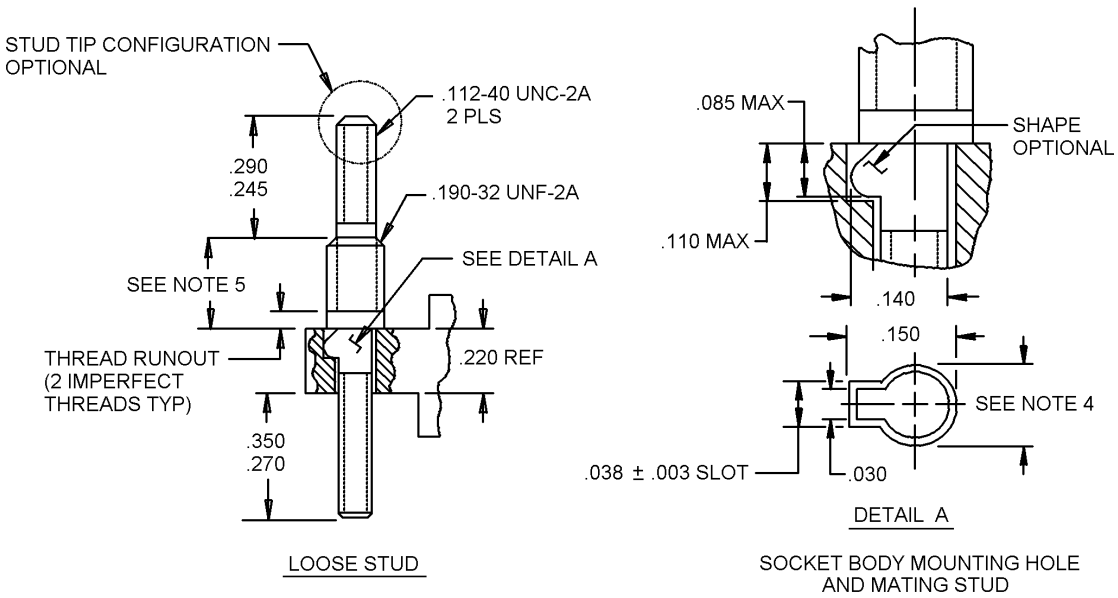
FIGURE 3. Socket mounting, fixed and loose studs.




| Inches | mm |
|---|---|
| .093 | 2.36 |
| .112 | 2.84 |
| .125 | 3.18 |
| .190 | 4.83 |
| .220 | 5.59 |
| .245 | 6.22 |
| .270 | 6.85 |
| .290 | 7.37 |
| .350 | 8.89 |

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are for general information only.
3. Unless otherwise specified, tolerances are ± .005 inch (0.25 mm) for three place decimals and ± .01 inch (0.25 mm) for two place decimals.
4 Length from top of socket flange to base of .112-40 UNC-20 thread fixed stud:
   -04 and -08 length shall be .318 ± .010 inch (8.08 ± 0.25 mm).
   -02 and -06 length shall be .290 ± .010 inch (7.37 ± 0.25 mm).

FIGURE 4. Stud fixed.




| Inches | mm | Inches | mm |
|---|---|---|---|
| .003 | 0.08 | .150 | 3.81 |
| .030 | 0.76 | .190 | 4.83 |
| .038 | 0.97 | .220 | 5.59 |
| .085 | 2.15 | .245 | 6.22 |
| .110 | 2.79 | .270 | 6.86 |
| .112 | 2.84 | .290 | 7.37 |
| .140 | 3.56 | .350 | 8.89 |

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are for general information only.
3. Unless otherwise specified, tolerances are ± .005 inch (0.13 mm) for three place decimals and ± .01 inch (0.25 mm) for two place decimals.
4. The diameter for the socket body mounting hole shall be:
   -03 and -07 diameter shall be .125 ± .003 inch (3.18 ±0.08 mm)
   -01 and -05 diameter shall be .116 ± .003 inch (2.95 ±0.08 mm).
5. Length from top of socket flange to base of .112-40 UNC-20 thread loose stud:
   -03, -04, -07, and –08 length shall be .318 ± .010 inch (8.08 ± 0.25 mm)
   -02, -05, -06, -09, and –10 length shall be .290 ± .010 inch (7.37 ±0.25 mm).

FIGURE 5. Stud loose.

REQUIREMENTS:

Design and construction: See figures 1 through 5, and tables I through V.

Insulator: Diallyl phthalate, in accordance with ASTM D5948, type SDG-F, any glass filled thermoplastic material in accordance with ASTM D5204.

Color: Material color shall be optional providing that the color provides a contrasting background for the blue sealing grommet or blue color bands indicating rear release contacts.

Grommet: Silicone rubber.

Mounting hardware: Corrosion resistant steel or steel with cadmium/chromate finish.

Electrical:

Insulation resistance: 1000 megohms minimum. Test pin diameter, size 16, .0625 ± .0010 inch (1.595 ± 0.025 mm), size 12, .094 ± .001 inch (2.39 ± 0.03 mm).

Dielectric withstanding voltage:

Sea level, the following conditions shall apply:

a. Test voltage, 1500 V rms.

b. Test pin diameter:
Size 16, .0625 ± 0.0010 inch (1.595 ± 0.025 mm).
Size 12, .094 ± .001 inch (2.39 ± 0.03 mm) as appropriate.

High altitude (80,000 feet (24.4 km), the following conditions shall apply:

a. For purposes of this test an air pressure of 26 millibar (2.6 kilopascals), will be used to simulate an altitude of 80,000 feet (24.4 km).

b. Test voltage, 500 V rms.

c. Test pin diameter:
Size 16 .0625 ± 0.0010 inch (1.595 ± 0.025 mm).
Size 12, .094 ± .001 inch (2.39 ± 0.03 mm).

Contacts: Contacts shall be removable crimp type in accordance with MIL-C-39029/92, or MIL-C-39029/5 (see table I).

TABLE I. Dash numbers and configurations.

| Dash number | Mounting style | Contact size | | Number of contacts | Contact designation M39029 | Mating relay MIL-PRF-83536 /32 and /33 |
|---|---|---|---|---|---|---|
| | | Mating end | Wire barrel | | | |
| 01 | Loose stud (figure 5) | 12 | 12 | 9 | /92 - 535 | -003 |
| | | 16 | 16 | 2 | /92 - 533 | |
| 02 | Fixed stud (figure 4) | 12 | 12 | 9 | /92 - 535 | |
| | | 16 | 16 | 2 | /92 - 533 | |
| 03 | Loose stud (figure 5) | 12 | 12 | 9 | /5 - 118 | |
| | | 16 | 16 | 2 | /5 - 116 | |
| 04 | Fixed stud (figure 4) | 12 | 12 | 9 | /5 - 118 | |
| | | 16 | 16 | 2 | /5 - 116 | |
| 05 | Loose stud (figure 5) | 12 | 12 | 9 | /92 - 535 | |
| | | 16 | 16 | 2 | /92 - 533 | |
| 06 | Fixed stud (figure 4) | 12 | 12 | 9 | /92 - 535 | |
| | | 16 | 16 | 2 | /92 - 533 | |
| 07 | Loose stud (figure 5) | 12 | 12 | 9 | /5 - 118 | |
| | | 16 | 16 | 2 | /5 - 116 | |
| 08 | Fixed stud (figure 4) | 12 | 12 | 9 | /5 - 118 | |
| | | 16 | 16 | 2 | /5 - 116 | |
| 09 | Fixed stud (figure 4) | 12 | 16 | 9 | 1/ /92-536 | |
| | | 16 | 16 | 2 | /92-533 | |
| 10 | Fixed stud (figure 4) | 12 | 16 | 9 | 1/ /92-536 | |
| | | 16 | 16 | 2 | /92-533 | |

1/ CAUTION: Because of the wire barrel size of M39029/92-536, current overload may be experienced at 12 amperes.

Environmental:

Temperature range: Operating temperature range -70°C to +125°C.

Wire sealing: A resilient grommet is permanently bonded to the wire entry face of the socket so as to provide moisture sealing capabilities. Wiring sealing range shall be as specified in table II.

TABLE II. Wire sealing range.

| Contact size | Contact | Wire diameter (mm) |
|---|---|---|
| 16-16 | M39029/92-533<br>M39029/5-116 | .065 min to.109 max<br>(2.46 min to 2.77 max) |
| 12-12 | M39029/92-535<br>M39029/5-118 | .097 min to .142 max<br>(2.46 min to 3.60 max) |

Mechanical:

Vibration (sinusoidal): In accordance with MIL-STD-202, method 204, test condition G, the following conditions shall apply.

a. Except that the frequency range shall be varied logarithmically between the limits of 10 Hz and 3,000 Hz.

b. Except that the procedure of MIL-STD-202, method 201 may be applied during 10 Hz to 55 Hz band of the vibration frequency range.

c. Mating relay shall be used as a test gauge.

Vibration (random): In accordance with MIL-STD-1344, method 2005, test condition V, letter G, with a test duration 15 minutes. The mating relay shall be used as the test gage.

Shock (mechanical): In accordance with MIL-STD-202, method 213, condition C, except peak value shall be 200 g's.

Insertion and withdrawal forces: The insertion and withdrawal forces of the relay and socket shall be as specified as in table III.

TABLE III. Insertion and withdrawal forces.

| Condition | Inspection | Insertion force |
|---|---|---|
| Initial | Insertion force (max) | 21 lbf (93.41 newton) |
| | Withdrawal force (min) | 2.0 lbf (8.90 newton) |
| After 10 insertions and withdrawals; before vibration | Insertion force (max) | 23 lbf (102.31 newton) |
| | Withdrawal force (min) | 2.0 lbf (8.90 newton) |
| After vibration | Insertion force | 23 lbf (102.31 newton) |
| | Withdrawal force (min) | 2.0 lbf (8.90 newton) |

Mounting hardware: The mounting hardware shall allow mounting the socket above, or below the panel or chassis (see figures 3, 4 and 5), and shall allow mounting and securing the relay to the socket without disturbing the mounted socket or access to the wiring side of the socket. The hardware shall provide the nominal spacing between socket surface and relay mounting flange, regardless of mounting configuration.

Supplied with relay socket 12883/48-01 through M12883/48-04 and M12883/48-09.

6 each .112-40 self locking nuts (.206 max dia x .176 max height).

6 each .112 flat washers (.220 max O.D. x .018 max thick).

3 each .190-32 self locking nuts (.330 max dia x .190 max height).

3 each .190 flat washers (.360 max O.D. x.019 max thick).

3 each studs for loose mounting configuration only (see figure 5).

Supplied with relay socket M12883/48-05 through M12883/48-08 and M12883/48-10

8 each .112-40 self locking nuts (.206 maximum diameter x .176 maximum height).

8 each .112 flat washers (.220 maximum O.D. x .018 maximum thickness).

4 each .190-32 self locking nuts (.330 maximum diameter x .190 maximum height).

4 each .190 flat washers (.360 maximum O.D. x .036 maximum thickness).

4 each studs for loose mounting configuration only (see figure 5).

Fixed mounting studs: Studs shall be fixed into the mounting flange of the socket and shall be designed so as to prevent rotation of the stud within the flange (see figure 4).

Contact installation tools: see table IV, approved equivalent industry standard tools may also be used where appropriate.

TABLE IV. Contact installation tools.

| Nomenclature | Part or Identifying Number (PIN) | |
|---|---|---|
| | Size 12 | Size 16 |
| Crimp tool | M22520/1-01, M22520/7-01 | M22520/1-01, M22520/7-01 |
| Positioner | M22520/1-02, M22520/7-03 | M22520/1-02, M22520/7-03 |
| Insertion/removal tool<br>Unwired<br>Wired | M81969/30-06, /30-07<br>M81969/8-08, /8-10, /14-04, /14-032 | M81969/14-03<br>M81969/30-06 |

Torque: Relay socket and hardware shall be subjected to torque testing as specified in table V. Sockets shall be installed in mounting panel when test torque is applied. No visual evidence of physical damage shall be permitted. Torque shall be maintained for a reasonable period of time to insure stud, socket, and associated hardware have not been damaged (see table V).

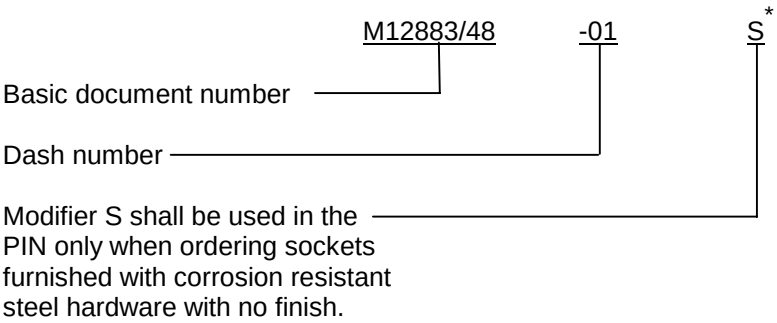
TABLE V. Torque requirements (installed in panel conditions).

| Thread size | Torque | | | |
|---|---|---|---|---|
| | Testing | | Installation | |
| | Inch-pounds | Newton-meters | Inch-pounds | Newton-meters |
| .112-40 | 8<br>+ 1<br>- 0 | 0.90<br>+ .11<br>- 0 | 4 ±1 | 0.45 ± .11 |
| .190-32 | 24<br>+ 1<br>- 0 | 2.71<br>+ .11<br>- 0 | 18 ±1 | 2.03 ± .11 |

Weight: .132 pound (60 grams) maximum weight of relay socket, all contacts, and all associated hardware.

PIN: The PIN shall be marked on the socket body as shown in the example (see figure 1). The PIN shall consist of the basic number of this specification sheet and the dash number from table I.

Example:




* For future acquisition of these sockets as of the effective date of revision D, 20 December 1989, parts identified with an "S": modifier shall be corrosion resisting steel (CRS), and parts without an "S" modifier shall be cadmium chromate finish. No mixing of hardware types shall be permitted.

Ordering data: Sockets without contacts may be ordered when so indicated in the ordering data (see MIL-DTL-12883). This applies only to original equipment manufacturers (OEM's) and subcontractors. All direct shipments to the government shall include all applicable contacts and mounting hardware. The PIN to be marked on the socket shall be as shown in the PIN example see figure 1 and table I.

Revision letters are not used to denote changes due to the extensiveness of the changes.

The Government PIN, specified in table VI, supersedes the following commercial PINs.

TABLE VI. Supersession and cross reference.

| Active Government PIN | Superseded manufacturers PIN | |
|---|---|---|
| | CAGE 58982 | CAGE 99699 |
| M12883/48-01 | RSE112061 | SME325-2001 AND S |
| M12883/48-02 | RSE112063 | SME325-1001 AND S |
| M12883/48-03 | RSL112105 | SE325-2002 AND S |
| M12883/48-04 | RSL112101 | SME325-2002 AND S |
| M12883/48-05 | RSE112065 | SME325-2002 AND S |
| M12883/48-06 | RSE112067 | SME3250-1002 AND S |
| M12883/48-07 | RSL112107 | SE325-2003 AND S |
| M12883/48-08 | RSL112103 | SE325-1008 AND S |

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Review activities:
Army - AR, AT, AV, CR4
Navy - AS, MC, OS, SH
Air Force - 99

Preparing activity:
DLA - CC

(Project 5935-4344-13)